

MEMOIRS
OF THE
GEOLOGICAL SURVEY
OF
THE UNITED KINGDOM.

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*Figures and Descriptions*

ILLUSTRATIVE OF  
BRITISH ORGANIC REMAINS.

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DECADE V.  
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1856.

BRITISH FOSSILS.

DECADE THE FIFTH.

IN apologizing for the unavoidable delay which has taken place in the publication of this Decade, owing to the much lamented decease of Professor Edward Forbes, it is right to state that the materials left behind by him were scanty, and had been unfortunately mislaid a short time before his death. The first description only, that of *Solaster Moretonis*, had been fully written by him; of the others, we had here and there notes on the distinctive characters of the species, and of his views as to their synonymy or history. The plates, however, had been all engraved under his own eye, and the specific designations under which he wished the figures to stand, were recorded in the last edition of Morris's Catalogue. He had there also applied MS. names to a number of species to be described in the Decade.

In a few cases only it has been found necessary to alter some of these names; and this has been done in deference to an authority which would have been gladly admitted by Professor Forbes. To Mr. S. P. Woodward, of the British Museum, we are indebted for all the notes respecting these supplementary species; and he has also furnished full descriptions of three of the plates. With this valuable aid, and the friendly communications of Dr. T. Wright, of Cheltenham, we can present the Decade in nearly as complete a form as it would have possessed had our friend and Master lived to finish it. We miss, however, his lively remembrance of the living species, and his practical acquaintance with their variations,—deficiencies not to be supplied by reference to his published works.

Of the ten species figured three are new,—*Solaster Morcisonis*, *Cidaris Carteri*, and *Pygaster conoideus*. Of the other genera, *Diadema*, *Echinopsis*, and *Echinus* present us with well-known types from the Oolitic rocks, which are continental as well as British. *Pyrina* is a rare genus in England, and in this, and the two figured species of *Pygaster*, we have excellent examples of that division of the *Cassidulidae* in which the ambulacra are of uniform character throughout. Several genera of this type have been figured in the Decades. The *Pygaster semisulcatus* is a critical species, and its synonymy is now for the first time cleared up. *Hemiaster Murchisonia* is another instance of the same kind, and belongs to a large genus of closely allied species. The *Brissus Scillæ* is a Crag species still existing in the Mediterranean. None of these nine genera have before appeared in the Decades.

There are engraved plates sufficient for another fasciculus, upon which Professor Forbes left no memoranda, except the names of the species. These Plates will be published at a future period.

JOHN W. SALTER,
Palæontologist.

Geological Survey Office, Jermyn Street, London,
February 1856.

BRITISH FOSSILS.

DECADE V. PLATE V.

CIDARIS CARTERI.

[Genus CIDARIS. KLEIN, 1734. (Sub-kingdom Radiata. Order Echinodermata. Family Cidaridæ.) Body spheroidal; ambulacra narrow, undulating, with two or more rows of miliary granules only; pores in single file; interambulacral segments very broad, with two rows of primary tubercles, few in number, the uppermost often rudimental; interspaces of the areolæ densely granulated; apical disk large, of 5 large genital and 5 ocular plates, round a pentagonal anal area minutely plated; oral opening round, simple, its disk composed of small imbricating plates. Primary spines few and large, all the rest small and flattened.]

DIAGNOSIS. *C. parva, subconica, ambulacris bigranulatis longitudinaliter sulcatis; tuberculis interambulacrorum conspicuis remotis—areolis omnibus parvis, superioribus elongatis, obsoletis.*

REFERENCES. *C. Carteri*, FORBES (1854), in Morris's Catal., 2nd edit. p. 74. DESOR (1854), Synopsis des Ech. Foss. p. 12.

Description.—*Cidaris Carteri* is the smallest species of the genus found in the English chalk; the specimen represented, though apparently adult, only measures 10 lines in diameter and 8 in height. It is like a miniature of the well-known *C. sceptrifera*, from which it differs chiefly in the more conical form, and in the less development of the areolæ in the uppermost plates. The ambulacra have only two distinct and two indistinct rows of granules, whereas the adult *C. sceptrifera* has four distinct and two indistinct rows. The primary tubercles are perforated, but not crenulated, and the areolæ are deeply sunk and surrounded by a rather conspicuous circle of mamillated granules. The apical plates are less roughly and densely granulated than in *C. sceptrifera*, and the oculars are relatively much smaller.

Locality and Geological Position.—The only specimen at present known is in the collection of James Carter, Esq., of Cambridge, who obtained it from the LOWER CHALK of that neighbourhood. In

BRITISH FOSSILS.

Morris's Catalogue it is erroneously stated to belong to the "Upper" Chalk, and in Desor's Synopsis to the "Gres vert sup."

EXPLANATION OF THE PLATE.

Fig. 1. Side view, natural size.

Fig. 2. Upper view, or dorsal surface.

Fig. 3. One of the interambulacral plates, and part of an ambulacrum, from the circumference.

Fig. 4. Apical disk, magnified.

Fig. 5, 6. Miliary spines, magnified.

Note on some other Species of Cidaris found in British Strata.

In Professor Morris's Catalogue three other species of *Cidaris* are enumerated, and referred to the unpublished MSS. of Professor Forbes.

Cidaris confluens Inf. O., Cheltenham.

C. dissimilis, L. Ch., Kent, Sussex.

C. Gaultina, Glt., Folkstone.

The characters may be given as follows :—

1. *Cidaris dissimilis*, Forbes, MS. Morris's Cat., 2nd. edit. p. 74. *C. sceptrafera*, Forbes in Dixon, pl. 25. f. 3.

Body small, 11 lines in diameter, $6\frac{1}{2}$ lines high, resembling *C. sceptrafera* in general character; ambulacra narrow, flexuous, with six ranges of small granules; interambulacral plates 4-5; areolæ circular, wide apart, surrounded by distinct secondary tubercles; principal tubercles prominent, slightly crenulated,—the lowest minute, the uppermost rudimentary and without areolæ; miliary granules large and prominent. Spines of two sorts; the largest above, 24 lines in length, slightly swelling above the collar ($2\frac{1}{2}$ lines diameter), and then tapering to a fine point; collar short, striated finely; shaft granulated in lines; spines of lower surface very slender, 3-6 sided, serrated at the angles; spines of areolar circles 2 lines in length, compressed and striated.

Locality.—GREY CHALK, DOVER. Collected by Messrs. Clarke, Dixon, and Taylor, (now in Brit. Mus. and Mus. Pract. Geology).

2. *Cidaris confluens*, Forbes, MS. Morris's Cat., 2nd edit. p. 74.

The specimen consists of four consecutive plates of nearly equal size, from one of the interambulacral rows. The set measures 1 inch in length and $\frac{1}{2}$ inch wide. The areolæ are $\frac{4}{5}$ lines wide, and broadly confluent one with another; the bosses prominent and crenulated; the lateral borders of the plates are narrow and uniformly granulated. There are numerous fragments of spines in the same piece of rock; they appear to have been very long, slender, cylindrical, striated lengthwise, and armed with a few large scattered prickles.

Locality.—INFERIOR OOLITE. Frome (not Cheltenham).

3. *Cidaris Gaultina*, Forbes, MS. Morris's Cat., 2nd edit. p. 74.

Detached plates of this species resemble those of *C. vesiculosa* (*subvesiculosa*, D'Orb.) from the Chalk. A plate from the upper part of the test has the areola surrounded by a circle of secondary tubercles, but not depressed. The spines are like those of *C. vesiculosa*, slender, elongated, and fluted, the ridges being more finely serrated; the collar of the spine is shorter than in *C. vesiculosa*. A broken spine accompanying the plates has the end expanded and cup-like; but in two other perfect examples the extremities are simply contracted and truncated.

Locality.—GAULT, Folkstone. (Mus. Practical Geology. Presented by Edward Clark, Esq.)

4. *Cidaris velifera*, Bronn. (Name only) Jahrb. 1835. p. 154. Desor, Syn. Ech. p. 34. t. 6. f. 12. *C. Heberti*, ib. p. 12. Syn. *C. globiceps*, Quenst., Petref. p. 577. t. 49. f. 17.

Of this small species there are three specimens in Mr. Cunnington's cabinet, one of them with six spines attached. The body measures 6 lines in diameter by 3 in height, and is like *C. clavigera* of the Upper Chalk; the spines are globular, measuring only 2 lines, with a very short stalk.

Locality.—UPPER GREEN SAND of Warminster.

5. *Cidaris sceptrifera*, König. (Dixon's Geol. Sussex, pl. 25. f. 5, 6. best figures.)

The spine figured by M. Desor, with the name "*C. filamentosa*, Ag." Synops. Ech. Foss. t. 5. f. 22., perfectly agrees with the typical specimens of *C. sceptrifera*; that figured as *C. sceptrifera* is more like a large broken spine of *C. dissimilis*.

6. *Cidaris sulcata*, Dixon, MS. Morris's Cat. 2nd edit. p. 75. *Cidaris sceptrifera*, var. *spinis truncatis*, Forbes, in Dixon's Geol. Sussex, p. 338. t. 25. f. 32, 33. *Cidaris vesiculosa*, Münster. (part.) Copied by Desor, Syn. Ech., pl. 5., f. 24, 25.

7. *Cidaris pleracantha*, Ag.? Dixon, Geol. Sussex, pl. 24. f. 23, 24. What has become of the figured spine is unknown; two rather smaller specimens are in the Dixonian Collection, now in the British Museum.

8. *Cidaris florigemma*, Phil. (1829), Geol. Yorks. 1. t. 3. f. 12. Park. Org. Rem. 3. t. 4. f. 15. *Cidaris Blumenbachii*, Desor, Synopsis, p. 5 (not Münster).

This very abundant urchin has been frequently called "*C. Blumenbachii*;" Münster having inadvertently figured its spines (and those of two others) as possibly belonging to the *test*, upon which he founded his species. The real *C. Blumenbachii* has not been found in England, unless the larger species obtained at Calne is to be considered a variety of it; there are fine specimens in the collection of Wm. Smith (Brit. Mus.), and Dr. Wright. M. Desor makes *C. crucifera*, Ag. the "young" of *C. florigemma*; but if not a distinct species it is certainly related to *C. coronata* and not to *C. florigemma*.

Locality.—CORAL RAG, Calne, Wilts.

S. P. WOODWARD.

March 1856.

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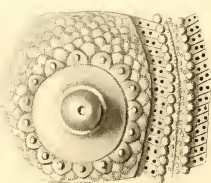
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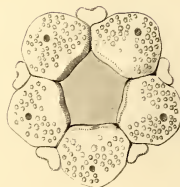
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CIDARIS CARTERI — Forbes.